Chapter 4

The impact of parenting styles on adolescent alcohol use: the TRAILS study

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ABSTRACT

Aims: To investigate the influence of parenting styles (Overprotection, Emotional Warmth, and Rejection) in early adolescence on regular alcohol use in late adolescence.

Methods: We analyzed data from the first three waves (mean ages: 11.09, 13.56 and 16.27 years, respectively) of a population-based prospective cohort study of 2230 adolescents, conducted between 2001 and 2007. Adolescents reported on parental overprotection, emotional warmth, and rejection (T1). Regular alcohol use was defined as six and seven glasses or more a week for girls and boys, respectively. We further assessed family socioeconomic status, parental divorce, parental alcohol use, educational level of the adolescent, and alcohol use at baseline.

Results: Parental overprotection had the strongest relationship to regular alcohol use: adolescents who perceived more parental overprotection were at increased risk of developing regular alcohol use, even after adjustment for several confounders. Rejection was not related to adolescents' alcohol use and, after adjustment for the other variables, neither was emotional warmth.

Conclusion: Overprotective parenting is a determinant of future regular adolescent alcohol use and therefore health professionals should pay particular attention to those adolescents who have overprotective parents. The role of adolescent characteristics in the relationship between overprotection and alcohol use deserves further study.

INTRODUCTION

Adolescence is the period in which most people start to drink alcohol. Four percent of US and 10% of European adolescents report having used alcohol at least 10 times during the previous 30 days. In the Netherlands this figure is higher: 24% reported this frequency of use.[1] A recent study has shown that young people who drink at an early age are more likely to develop alcohol dependence than are late starters.[2]

The family is a major source for learning values, norms, and manners during childhood and adolescence.[3] Although autonomy increases during the transition to adolescence, parents remain highly important for adolescents' development.[4] Parenting is a socialization process in which parents shape their children's behavior.[5] Three of the core aspects of parenting are Overprotection, Emotional Warmth, and Rejection. Overprotection is characterized as fearfulness and anxiousness for the child's safety, guilt engendering¸ and intrusiveness. Emotional warmth denotes paying special attention, praising approved behavior, unconditional love, and being supportive and affectionate. Finally, rejection is characterized by hostility, punishment, derogation, and blaming the child. In terms of drinking behavior, these general aspects of parenting may affect alcohol use during adolescence. Overprotection of the child, providing emotional warmth, and rejection of the child may each have its own particular effect. However, literature regarding this does not show conclusive evidence.

Overprotection has been linked to child behavioral problems such as internalizing and externalizing problems.[6,7] It may disturb the development of the individual autonomy of the adolescent, resulting in behavioral problems such as alcohol use. However, as far as we know, only two longitudinal studies have examined the influence of overprotection on alcohol use.[8,9] Creemers et al.[8] found a significant association between overprotection and alcohol use, while Van der Vorst et al.[9] did not.

Emotional warmth may reduce adolescent alcohol use. Children who experience more emotional warmth from their parents will learn to better regulate their emotions and to cope with problems, and consequently, will also learn to regulate their drinking behavior.[10] A large number of longitudinal studies have assessed the influence of emotional warmth on adolescent alcohol use, but the results found have been inconsistent. Some studies have shown that emotional warmth is negatively related to alcohol use,[11,12] while other studies found no effect.[13-15]

Rejection of the child may increase the risk of alcohol use, especially because it limits the adolescent's skills in regulating emotions and coping with problems adequately. However, previous research regarding the longitudinal influence of rejection on alcohol use during adolescence has also shown inconsistent results. Some studies have found that rejection is a risk factor for alcohol use,[16-18] while other studies[14,15,19] found no association.

In sum, little is known about the association between overprotection and alcohol use due to the limited amount of research in this regard. Furthermore, studies regarding the influence of parental emotional warmth and rejection on adolescent alcohol use show inconsistent results. The lack of important potential confounders (e.g., parental alcohol use) being considered in the analysis might in part explain these inconsistent results. This might well have resulted in a biased assessment of the effects of those aspects of parenting on alcohol use. Moreover, most studies had small sample sizes leading to a lack of power to detect effects.

For the development of prevention and intervention programs aimed at reducing alcohol use during adolescence, more knowledge is needed about the effects of parenting behaviors on the development of adolescents' alcohol use. Therefore, the aim of this study was to investigate whether general parenting behaviors affect the development of adolescents' alcohol use and, if so, which aspects of parenting play a part. For this, we studied the role of the parenting behaviors of Overprotection, Emotional Warmth, and Rejection in early adolescence, taking into account important potential confounders. We analyzed the parenting behaviors separately but also analyzed whether or not they work together. We used data from a large population-based cohort study of Dutch adolescents.

METHODS

Sample and procedure

This study is part of the TRacking Adolescents' Individual Lives Survey (TRAILS), a prospective cohort study of Dutch adolescents. TRAILS participants were selected from five municipalities in the northern Netherlands and were included in the study if their school was willing to collaborate and if they were not excluded because of mental or physical incapacity or language problems. Enrollment started in 2001. Of all children approached, 76% (N=2230) of both children and parents provided informed consent to participate. The mean age of the children at T1 was 11.09 years (*SD* = 0.55) and 50.8% of these were girls; at least one parent of 10.3% of the children was born in a non-Western country; 25.3% came from a low socioeconomic background. At T2 and T3 the mean age was 13.56 (*SD* = 0.53) and 16.27 (*SD* = 0.73), respectively. Of the 2230 baseline participants, 1839 (82.5%) continued to participate at the third measurement and 1514 (67.9%) of their parents did. Detailed information about sampling procedures and non-response bias has been reported elsewhere.[20,21]

During the first measurement wave, well-trained interviewers visited one of the parents or guardians (preferably the mother: 95.6%) at their homes to administer an interview covering a wide range of topics including developmental history, somatic health, parental psychopathology, and care utilization. The parent was also asked to fill out questionnaires. At each assessment the child filled out questionnaires at

school, in the classroom, under the supervision of one or more TRAILS assistants. During the second and third measurement waves the child and the parent again filled out questionnaires. Non-responders at T3 did not show significant differences in levels of alcohol use at T1 ($\chi^2 = 5.54$, $p = .063$) but were more likely to be a boy ($\chi^2 = 7.44$, $p < 0.01$), to have a lower socioeconomic status SES; ($t = -8.90$, $p < 0.001$), and to have parents with lower levels of alcohol consumption ($t = -4.35$, $p < 0.001$; $t = -5.29$, $p < 0.001$ for father and mother, respectively) as compared to responders.

Given the difference between responders and non-responders, multiple imputation[22] was used to reduce the risk of bias. Multiple imputation also reduces also the loss of statistical power due to missing data. To account for the uncertainty in imputed data, multiple data sets (i.e., twenty) were created based on different estimated underlying distributions coming from all three measurement waves. The analysis was performed for all of these data sets, subsequently the values of the parameter estimates (i.e., odds ratios) and standard errors across the data sets were pooled in order to obtain single estimates and standard errors.

Measures

Parenting

Parenting at T1 was measured using the EMBU-C (Swedish acronym for My Memories of Upbringing), a questionnaire assessing children's perception of the current parental rearing practices of their father and mother.[23] For the present study we used the scales of Overprotection, Emotional Warmth, and Rejection. The scale of Overprotection contained 12 items (e.g., "Do your parents forbid you to do things that your classmates are allowed to do because they are afraid of something happening to you?" or "Do you think that your parents are too worried about things happening to you?"). The Cronbach's alpha of this scale was .70 and .71 for father and mother, respectively. Emotional Warmth was measured using 18 items (e.g., "Do you think your parents love you?" or "Do your parents sometimes tell you that you've done well?"). The Cronbach's alpha of this scale was .91 for fathers and mothers. Rejection was measured using 12 items (e.g., "Are your parents sometimes harsh and unkind to you?" or "Do your parents sometimes make you feel really little?"). The Cronbach's alpha of this scale was .84 and .83 for father and mother, respectively. Children could rate the items as 1 = no, never; 2 = yes, sometimes; 3 = yes, often; or 4 = yes, almost always. We combined the scores for father and mother by taking the mean. The scores were standardized to mean=0 and standard deviation=1.

Alcohol use

The adolescent's alcohol use was measured at T1 and T3. At T1 the adolescent was asked: "How often have you drunk alcohol (e.g., a bottle of beer or a glass of wine)?" The possible answers were no, never; 1 time; 2-3 times; 4-6 times; or 7 times or

more. Because the frequencies of the higher scores were low, the responses were recoded to 0 = "never," 1 = "once," and 2 = "more than once." The measurement was derived from the 'self-reported delinquency scale'.[24] The adolescent's alcohol use at T3 was measured by using a frequency-quantity measure. Frequency was measured by asking the adolescent on how many weekdays (Monday to Thursday) and on how many weekend days (Friday to Sunday) he/she usually drank alcohol. The quantity was measured by asking how many alcoholic drinks (glasses, bottles or cans) he/she had drunk on weekdays and weekend days (9-point scale ranging from "I never drink on a weekday/weekend day" (1) to "11 glasses or more" (9)). The frequency scores for the weekdays and the weekend days were multiplied by the quantity scores and then both scores were summed. This resulted in a score for the number of drinks in a usual week. In line with definitions of drinking levels in adults, separate outcome variables for girls and boys were constructed. We dichotomized the answers as 0 = "no regular drinking" and 1 = "regular drinking," where girls who drank six glasses or more a week and boys who drank seven glasses or more a week were defined as regular drinkers. The questions were derived from Engels and Knibbe.[25]

Parental alcohol use was measured at T1 by asking the parent: "Did you or your partner use alcohol last year? If that is the case, how many glasses per week did you or your partner drink on average?" The responses could be given separately for father and mother and ranged from 1 (no/a few times) to 6 (more than 20 glasses a week).

Socioeconomic status

The SES was measured at T1 on the basis of family income, the educational level of both parents, and the occupational level of both parents based on the International Standard Classification of Occupations (ISCO).[26] An index of socioeconomic status was created by averaging the standardized scores of the five indicators.[27] To correct for a non-linear relationship with adolescents' alcohol use, results were also adjusted for the square of SES.[28]

Parental divorce

Parental divorce was measured at T1 and T2 and related to whether or not the biological parents were divorced.

Level of education of the adolescent

The level of education of the child was measured at T2 and consisted of eight categories that ranged from primary school to pre-university education.

Statistical analysis

We began by computing descriptive statistics for all the included variables. Then we performed a multivariate logistic regression analysis (enter method) for each aspect

of parenting, separately, in order to analyze the prospective association between the parenting styles and alcohol use. In each first model we analyzed the effect of the parenting style concerned, adjusted only for age. In the second model we also adjusted for family factors (SES, parental divorce, alcohol use of the father and mother) and for educational level of the adolescent. In the third model we also added alcohol use of the adolescent at baseline. We checked whether the results would differ for different cut-offs of adolescent alcohol use at T3, but the results were similar. Furthermore, we checked whether associations differed by gender of the child by assessing the interaction of each aspect of parenting with gender, but no statistically significant interaction effects were found. Finally, we repeated the multivariate logistic regression analyses with the three parenting styles entered simultaneously. We tested whether there was a two-way or a three-way interaction between the parenting styles, but none of the interactions were significant and therefore were not included in the analysis.

RESULTS

Table 1 shows the mean scores or percentages of the variables used. At baseline, 68.9% of the adolescents had never drunk a bottle of beer or a glass of wine; 15.6% had drunk alcohol once and 15.6% had drunk alcohol more than once. At T3, 43.9% of the adolescents reported *regular* alcohol use.

Table 2 presents separately the results obtained from the multivariate logistic regression analysis for the effects of Overprotection, Emotional Warmth, and Rejection on regular alcohol use by adolescents, adjusted for age, family SES, parental divorce, parental alcohol use, educational level of the adolescent, and alcohol use at baseline. The first model assessed the effects of the three parenting styles, adjusted only for age. Overprotection and Emotional Warmth were significantly associated (odds ratio [OR] = 1.11, 95% CI = 1.01-1.23; and OR = 0.89, 95% CI = 0.80-0.98, respectively) with regular alcohol use: Overprotection increased and Emotional Warmth decreased the risk of developing regular alcohol use. Rejection was not significantly associated with regular alcohol use. In the second model, family factors and educational level of the adolescent were also taken into account. The effects of Overprotection did not change and became_marginally significant (OR = 1.11, 95% CI = 1.00-1.23), while the effect of Emotional Warmth decreased and became non-significant (OR = 0.92, 95% CI = 0.83-1.03). In the last model alcohol use at baseline was added. The strength of the effect of Overprotection slightly decreased and became non-significant (OR = 1.10, 95% CI = 0.98-1.21). Statistical significance decreased from p = 0.053 to p = 0.096 (results not shown).

Table 1. Characteristics of the adolescents included in the study.

	Not regular drinkers (n=1251)		Regular drinkers (n=979)		Total (n=2230)		Min	Max
	Mean	SE	Mean	SE	Mean	SE		
Male, %	46.7		52.5		49.2			
Overprotection	1.84	.011	1.88	.014	1.86	.008	1.00	3.50
Emotional Warmth	3.24	.015	3.18	.019	3.21	.011	1.17	4.00
Rejection	1.47	.009	1.50	.012	1.48	.007	1.00	3.47
Socio-economic status	0.01	.031	-0.12	.034	-0.05	.017	-1.94	1.73
Parental divorce: yes, %	21.7		28.9		24.8			
Alcohol use father[a]	3.23	.045	3.46	.059	3.33	.031	1.00	6.00
Alcohol use mother[a]	2.61	.040	2.78	.054	2.68	.028	1.00	6.00
Alcohol use child baseline, %								
Never	75.5		60.5		68.9			
Once	13.8		17.8		15.6			
More than once	10.7		21.8		15.6			
Educational level adolescent	4.89	.077	4.53	.074	4.72	.045	1.00	8.00

SE = standard error, min = minimum, max = maximum
[a] Alcohol use of the father and mother ranged from 1 (no/ a few times) to 6 (more than 20 glasses a week).

Table 2. Multivariate logistic regression estimates for the effects of Overprotection, Emotional warmth, and Rejection separately on adolescent regular alcohol use: odds ratios (95% confidence intervals).

	Adolescent regular alcohol use at age 16.3[a]		
	Model 1[b]	Model 2[c]	Model 3[d]
Overprotection	1.11 (1.01-1.23)*	1.11 (1.00-1.23)[§]	1.10 (0.98-1.21)
Emotional Warmth	0.89 (0.80-0.98)*	0.92 (0.83-1.03)	0.95 (0.85-1.06)
Rejection	1.10 (1.00-1.21)	1.08 (0.98-1.20)	1.04 (0.94-1.16)

[a] ≥6 glasses weekly for girls and ≥7 glasses weekly for boys.
[b] Model 1 is adjusted for age.
[c] Model 2 is adjusted for age, SES, parental divorce, parental alcohol use, and educational level of the adolescent.
[d] Model 3 is adjusted for age, SES, parental divorce, parental alcohol use, educational level of the adolescent, and alcohol use at baseline.
* $p<0.05$
[§] $p\leq0.06$

In the next step the effect of the three parenting styles were tested in the same way (i.e., adjusted for the same variables in the three models), but now the parenting styles were entered simultaneously, because they may affect each other (Table 3). Although the OR for Overprotection showed a small increase and for Emotional Warmth a small decrease, the results were similar to those of previous analyses. We only found a contrast in the effect of Overprotection in the final model: in contrast to previous analysis, the effect of Overprotection was marginally significant (OR = 1.14, 95% CI = 1.00-1.30).

Table 3. Multivariate logistic regression estimates for the effects of Overprotection, Emotional Warmth, and Rejection simultaneously on adolescent regular alcohol use: odds ratios (95% confidence intervals).

	Adolescent regular alcohol use at age 16.3[a]		
	Model 1[b]	Model 2[c]	Model 3[d]
Overprotection	1.15 (1.01-1.31)*	1.14 (1.00-1.30)[§]	1.14 (1.00-1.30)[§]
Emotional Warmth	0.86 (0.76-0.97)*	0.90 (0.79-1.02)	0.91 (0.80-1.04)
Rejection	0.98 (0.86-1.12)	0.99 (0.87-1.13)	0.96 (0.83-1.10)

[a] ≥6 glasses weekly for girls and ≥7 glasses weekly for boys.

[b] Model 1 is adjusted for the other parenting behaviors and for age.

[c] Model 2 is adjusted for the other parenting behaviors, age, SES, parental divorce, parental alcohol use, and educational level of the adolescent.

[d] Model 3 is adjusted for the other parenting behaviors, age, SES, parental divorce, parental alcohol use, educational level of the adolescent, and alcohol use at baseline.

* $p<0.05$

[§] $p\leq0.06$

Although it was not a primary aim of this study to look into the level of adolescent baseline alcohol use and parental alcohol use as predictors of later regular use, we did find that these were important predictors. In each analysis an odds ratio of 1.5 and 2.3 was found for one-time and more-than-one-time of alcohol use at baseline, respectively. Furthermore in each analysis the odds ratios for parental alcohol use were 1.1 for both fathers and mothers (results not shown).

DISCUSSION

The purpose of this study was to assess the effects of overprotection, emotional warmth, and rejection on alcohol use during adolescence. We showed that overprotection had the strongest effect on alcohol use later on. Emotional warmth did affect alcohol use; however this association became non-significant when adjusted for the confounders. Furthermore, rejection was not related to adolescent alcohol use.

Overprotection was marginally significantly associated with alcohol use, when adjusted for the influence of emotional warmth and rejection, but not if assessed unadjusted. However, though passing the cut-off for statistical significance, the differences in p-values were very small. Although the effects were small, in both cases adolescents who believed their parents were more overprotective were at increased risk of developing regular alcohol use.

Our findings regarding the role of overprotection are in line with the study of Creemers et al.[8] They defined regular alcohol use as drinking on 10 or more occasions in the past four weeks and did not adjust for previous alcohol use as we did, but did find the same results. However, our findings are in contrast with the findings of Van der Vorst et al.,[9] which did not show an association. The latter could be explained by the fact that Van der Vorst et al. had a much smaller sample size than we did, which might have resulted in a lack of power to detect effects. Another study[29] investigated the association of overprotection with regular use cross-sectionally, but did not find a direct relationship between overprotection and alcohol use. However, this study also used a smaller sample size than the present study did.

The association we found between overprotection and alcohol use can be explained in three ways. Overprotection itself may lead to regular alcohol use. Alcohol use may serve as a form of protest against parental meddling that conflicts with adolescents' striving for autonomy. On the other hand, certain child characteristics or behaviors may influence parenting behaviors.[30,31] Characteristics such as being depressed,[32] being open to new experiences, or being highly sensitive to the influence of peers may give the parents the feeling that their child is at risk for developing regular alcohol use. That feeling may lead to the parents being overprotective in an attempt, which is partly in vain, to prevent the development of regular alcohol use. The same holds true for children with externalizing behavioral problems. Behavior as aggression and delinquency may lead to overprotection. A final explanation may be that there is a reverse causal relationship between overprotection and alcohol use, that is, parents may become overprotective after noticing that their child drinks alcohol, or there may be a bi-directional association, that is, overprotection may lead to regular alcohol use and vice versa.

Another finding of this study is that emotional warmth did reduce the risk of developing regular alcohol use; however, the strength of this association decreased (and became statistically non-significant) after adding the family factors and the educational level of the adolescent. Previous studies showed conflicting results regarding a longitudinal association between emotional warmth and alcohol use.[12,14,15] One explanation for the difference in results could be the inclusion of different confounding variables. Monshouwer et al.[33] studied predictors of adolescent substance use and demonstrated the important role of potentially confounding parental factors. Inclusion of these variables lowered the strength of the association. Parental factors such as parental divorce[34] and SES[35] may account

for the association between parenting style and adolescent alcohol use; however, some previous studies did not address this. Another explanation for the difference in results could be reverse causality, that is, high levels of alcohol use may cause parents to provide less emotional warmth to the child as characterized by being less supportive and providing less praise due to less approved behavior. Until now, only two studies[9,13] have tested this reversed longitudinal association but with contradictory findings.

Our finding that rejection was not associated with alcohol use during adolescence is consistent with previous studies on the role of rejection in terms of future regular use in adolescents.[36,37] Our adjustment for confounders did not make a difference in that regard. Some other studies have found an association between rejection and regular use of alcohol.[17,18] However, these concerned an older age group or used a somewhat different conceptualization of rejection (e.g., child abuse or neglect), which may explain the different results.

Furthermore, the difference in findings regarding the influence of emotional warmth and rejection on alcohol use can be explained by the influence of alcohol-specific parenting. Alcohol-specific parenting has been shown to be related to adolescent alcohol use. Setting rules about alcohol use[38] or expressing disapproval of drinking[39] is associated with reduced adolescent alcohol consumption, while permitting drinking at home[40] or providing alcohol to the child is associated with increased levels of use.[41] However, Van der Vorst et al.[42] has shown that parental drinking is associated with less strict rules about alcohol use. So alcohol-specific parenting may act as a mediator between parental alcohol use and adolescent alcohol use. The influence of emotional warmth and rejection may thus at least partially depend upon whether they are translated into alcohol-specific parenting behaviors; this, however, clearly deserves additional study.

Strengths and limitations

An important strength of this study is that we used data from a large prospective sample. A second strength is that levels of alcohol use were measured at the first wave, whereas most studies only report the age of onset retrospectively. A first limitation of this study is that levels of alcohol use were measured using self-report by the adolescent, which may have resulted in socially desirable answers. However, a previous study has shown that self-reporting is a valid method of measuring alcohol use.[43] A second limitation may be that parenting behaviors were reported by the adolescent and not by the parent, which may have resulted in a bias in the measurement. However, it has been shown that children are influenced by parenting practices through their mental representations of it [44] and therefore a child report may be preferred to a parent report. A third limitation is that we were not able to control for peer drinking levels [45] and alcohol-specific parenting which might influence the associations between the parenting styles and adolescents'

alcohol use. A final limitation is that we were unable to draw conclusions about the direction of a causal relationship between overprotection and alcohol use, because we assessed overprotection only at the first wave.

Implications

To our knowledge, this is one of the first studies to show a prospective relationship between overprotection and adolescents' regular alcohol use. Our findings therefore need confirmation. In addition, more research is needed on the role of adolescent characteristics (e.g., being depressed, openness to new experiences, or sensitivity to the influence of peers) in the relationship between overprotection and alcohol use. This is necessary to enable us to reach more decisive conclusions about the effect of parental overprotection on (regular) adolescent alcohol use. However, we can conclude that in the identification of adolescents at risk for regular alcohol use, health professionals should pay particular attention to those adolescents who have overprotective parents, given its predictive value. Moreover, further research regarding those factors predicting the early onset of use is urgently needed, since early levels of use are strongly related to later levels of use, as this study has shown.

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